APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,426	01/18/2000	Jan E. Forslow	2372-49	9686

7590 05/06/2004	EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 February 2004</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16-20,23-43,45-53,55-59,61,62 and 64-75* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20, 23, 27-36, 40, 55 - 59, and 61, 62, and 64-75* is/are allowed.

6)☒ Claim(s) *1,2,6-14,16-19,24-26,37-39,41-43 and 45-47, and 49-53* is/are rejected.

7)☒ Claim(s) *3-5 and 48* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35

U.S.C. 112:

> The specification shall conclude with one or more claims particularly
> pointing out and distinctly claiming the subject matter which the applicant
> regards as his invention.

2.   Claim 58 recites the limitation "the tunnel" in 6.   There

is insufficient antecedent basis for this limitation in the

claim.

3.   Claims 24-26 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point

out and distinctly claim the subject matter which applicant

regards as the invention. Claim 24 is dependent upon cancelled

claim 15. Claims 25 and 26 are dependent upon claim 24.

Claim Objections

4.   Claim 20 is objected to because of the following

informalities: On line 3, "hme" must be changed to "home".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which

forms the basis for all obviousness rejections set forth in this

Office action:

> (a) A patent may not be obtained though the invention is not identically
> disclosed or described as set forth in section 102 of this title, if the
> differences between the subject matter sought to be patented and the prior
> art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the
> art to which said subject matter pertains. Patentability shall not be
> negatived by the manner in which the invention was made.

6.   Claims 1, 2, 6-11, 13, 16-18, 37-39, and 41 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Khalil (US

6,430,698) in view of Okanoue (6,243,758).

Regarding claim 1, Khalil teaches a method and apparatus

for use in an Internet (fig. 11 box 14), a public mobile access

data network (fig. 11 box 22, roams over a public network, col.

15 lines 17-19) providing a mobile node (fig. 11 box 11) data

access to the Internet and data access to the mobile node from

the Internet.

The system comprises plural home agent mobility tunnel

servers, coupled to a backbone of the Internet (fig. 11 box 22),

and forming a virtual home agent network for the mobile node

(virtual, col. 7 lines 13-17, tunneled by the home agent, col. 1

lines 58—60).

The system comprises a home agent mobility manager coupled
to the backbone of the Internet that is configured to establish
a data tunnel between one of the home agent mobility tunnel
servers and one of the foreign agents to communicate data with
the one mobile node (tunneled by the home agent, col. 1 lines
58-60).

Regarding claim 37, in addition to the limitations
previously listed, one of the foreign agents serving the mobile
node sending registration messages to all home agents in the
virtual home agent network (Khalil: fig. 2, col. 2 lines 59-64).
Note, the examiner maintains that a foreign agent exists between
the mobile node 11 and Internet 14.

Although Khalil teaches a foreign agent coupled to the home
agent for communicating with one or more mobile nodes over a
radio interface (col. 1 lines 56-60), the reference is silent on
a plurality of foreign agents coupled to the mobile nodes and
home agents, as specified in claims 1 and 37; and plural foreign
agent routers coupled to the home agent router for communicating
with one or more mobile nodes, as specified in claim 8.

Okanoue teaches a plurality of foreign agents coupled to
the mobile node (fig. 1 box 3, col. 4 lines 1 - 2), as specified

in claims 1 and 37 and plural foreign agent routers (fig. 1 box
3) coupled to the home agent router (fig. 1 box 2) for
communicating with one or more mobile nodes (fig. 1 box 1), as
specified in claim 8.

Therefore it would have been obvious to one of ordinary
skill in the art, having both Khalil and Okanoue before him/her
and with the teachings [a] as shown by Khalil, for use in an
Internet, a public mobile access data network providing a mobile
node data access to the Internet and data access to the mobile
node from the Internet, and [b] as shown by Okanoue, a plurality
of foreign agents coupled to the mobile node, to be motivated to
modify the system of Khalil by installing multiple foreign
agents in the network for communication between the mobile node
and the virtual home agent (fig. 11 box 22). This would improve
the system by not overloading the capacity of the foreign agent.

Regarding claim 2, the public mobile access data network
provides a public mobility service to locate current locations
of mobile nodes so that the Internet is aware of a current point
of attachment of one or more mobile nodes to the public mobile
access data network (Khalil: col. 1 lines 48-51). The examiner
maintains that the home agent is part of the Internet.

Regarding claim 6, all public mobile access data network is operated by an ISP (Khalil: col. 2 lines 33-34).

Regarding claim 7, the public mobile access data network provides data communication by way of the Internet (Khalil: fig. 11 box 14).

Regarding claim 8, in addition to the limitations previously listed, the system provides for a home agent router (Khalil: fig. 11 box 16) coupled to a backbone of the Internet (Khalil: fig. 11 box 14), and a data tunnel is established between the home agent router and one of the foreign agent routers to communicate data with one or more of the mobile nodes (Khalil: tunneled by the home agent, col. 1 lines 58–60).

Regarding claim 9, the home agent router (Khalil: fig. 11 box 16) is located at a point of presence near the Internet backbone (Khalil: fig. 11 box 14).

Regarding claim 10, one or more of the foreign agent routers (Khalil: fig. 11 box 24) is located at a local point of presence near a radio access point (Khalil: fig. 11: Foreign

Link) where the mobile node (Khalil: fig. 11 box 11) attaches to the public mobile access data network.

Regarding claim 11, the mobile node de-attaches from the public mobile access data network at one of the foreign agents and re-attaches to the public mobile access data network at another one of the foreign agents (Khalil: changes its point of attachment, col. 1 lines 41-43).

Regarding claim 13, one of the foreign agent routers is configured to send registration message to all home agents in the virtual home agent network (Khalil: fig. 2, col. 2 lines 59-64). Note, the examiner maintains that a foreign agent exists between the mobile node 11 and Internet 14.

Regarding claims 16 and 39, if one of the home agents in the virtual home agent network is dysfunctional, another of the home agents in the virtual home agent network forwards data to and from the mobile node (Khalil: fig. 19, col. 13 lines 47-51).

Regarding claims 17 and 41, one of the home agents (Khalil: fig. 11 box 16) in the virtual home agent network (Khalil: fig. 11 box 22) closest to a corresponding node sending data to the

mobile node (Khalil: fig. 11 box 11) via the Internet (Khalil:

fig. 11 box 14) is selected to forward data to and from the

mobile node.

Regarding claim 18, the closest home agent has a smallest

routing metric relative to the corresponding node (Khalil: fig.

11, more evenly distributes the load, col. 4 lines 47-49).

Regarding claim 38, wherein any one of the home agents in

the virtual home agent network may forward data to and from the

mobile node (Khalil: fig. 11, more evenly distributes the load,

col. 4 lines 47-49).

7.   Claims 12, 14, 19, and 42 are rejected under 35

U.S.C. 103(a) as being unpatentable over the combination of

Khalil and Okanoue, as applied to claims 1 and 37 above, and

further in view of Agraharam (US 6,407,988).

Regarding claims 19 and 42, in addition to the limitations

previously mentioned, a home agent and foreign agent are located

near a private network (Khalil: col. 7 lines 49-56).

Regarding claims 12, 14, 19, and 42, the combination is

silent on the home agent router and one of the foreign agents

being co-located.

Regarding claims 12, 14, 19, and 42, Agraharam teaches the

home agent router and one of the foreign agents being co-located

(fig. 1 box 104-1).

Therefore it would have been obvious to one of ordinary

skill in the art, having both the combination of Khalil and

Okanoue and Agraharam before him/her and with the teachings [a]

as shown by the combination of Khalil and Okanoue, a method and

apparatus for configuring a public mobile access data network to

provide public data access between an Internet and a mobile node

which is attachable to various points of the public mobile

access data network, and [b] as shown by Agraharam, the home

agent router and one of the foreign agents being co-located, to

be motivated to modify the system of the combination of Khalil

and Okanoue by replacing one of the distinct home agents and

foreign agent router of Khalil with a co-located home agent and

foreign agent as shown by Agraharam. This would improve the

system by simplifying the connection between the home agent and

foreign agent.

8.   Claims 43, 47, 49, 50, and 52 are rejected under 35

U.S.C. 103(a) as being unpatentable over the combination of

Khalil and Okanoue as applied to claim 37 above, and further in view of Ma (US 6,493,317).

Regarding claim 43, in addition to the limitations previously listed, the system comprises the home agent and foreign agent routers communicate using a mobile Internet protocol (Khalil: virtual distributed home agent protocol, col. 6 line 63 - col. 7 line 2).

Although Khalil teaches tunneling (col. 1 lines 58—60) the reference is silent on the tunneling includes a label switched path that uses multi-protocol label switching 'MPLS' in an IP environment, as specified in claim 43; and the home agent and foreign agent are label switched routers as specified in claim 47.

Ma teaches tunneling via a label switched path that uses multi-protocol label switching 'MPLS' in an IP environment (fig. 1, col. 5 lines 47-53) as specified in claim 43. Regarding claim 47, given label switching, the home agent and foreign agent routers would have to be label switched routers in order to forward the data.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Khalil and Okanoue and Ma before him/her and with the teachings [a] as shown by the combination of Khalil and Okanoue, a method and

apparatus for configuring a public mobile access data network to

provide public data access between an Internet and a mobile node

which is attachable to various points of the public mobile

access data network, and [b] as shown by Ma, tunneling via a

label switched path that uses multi-protocol label switching

'MPLS' in an IP environment, to be motivated to modify the

system of the combination of Khalil and Okanoue by tunneling

using MPLS and replacing the home agent and foreign agents of

Khalil with home agent and foreign agent routers that comply

with label switching protocols. This modification can be

performed by adhering to MPLS standards. This would improve the

system since MPLS has been shown to work well in an IP

environment.

Regarding claim 49, the limitation of merging data from

plural regional foreign agents toward the home agent has

previously been addressed. As previously shown, Okanoue teaches

a single home agent (fig. 1 box 2) in communication with a

plurality of foreign agents (fig. 1 box 3, col. 4 lines 1-2).

Regarding claim 50, the limitation aggregating paths at the

home agent for plural regional foreign agents has previously

been addressed. As previously shown, Okanoue teaches a single

home agent (fig. 1 box 2) in communication with a plurality of

foreign agents (fig. 1 box 3, col. 4 lines 1-2).

Regarding claim 52, determining a primary path and a

redundant, secondary path (Khalil: fig. 19, failure recovery

agents, col. 13 lines 47-51).

9.   Claims 45, 46, 51, and 53 are rejected under 35

U.S.C. 103(a) as being unpatentable over the combination of

Khalil, Okanoue, and Ma as applied to claim 43 above, and

further in view of Alden (US 6,101,543).

Regarding claim 45, in addition to the limitations

previously addressed, the home agent establishing the tunnel

with the foreign agent using the care-of-address (Khalil: col. 1

line 66 - col. 2 line 4).

The combination of Khalil, Okanoue, and Ma is silent on one

or more tunnel attributes, as specified in claim 45; one or more

desired tunnel attributes includes a class of service,

bandwidth, traffic type, primary and secondary paths, or

selective routing, as specified in claim 46; determining the

route of the label switched path to be something other than the

shortest route, as specified in claim 51; and selecting one of

two or more paths to balance a traffic load, as specified in
claim 53.

Alden teaches one or more tunnel attributes (load
balancing, col. 6 lines 41-46), as specified in claim 45; one or
more desired tunnel attributes includes a class of service,
bandwidth, traffic type, primary and secondary paths, or
selective routing (load balancing, col. 6 lines 41-46), as
specified in claim 46; determining the route of the label
switched path to be something other than the shortest route
(load balancing, col. 6 lines 41-46), as specified in claim 51;
and selecting one of two or more paths to balance a traffic load
(load balancing, col. 6 lines 41-46), as specified in claim 53.
Note, regarding claim 46, the examiner corresponds selective
routing with load balancing.

Therefore it would have been obvious to one of ordinary
skill in the art, having both the combination of Khalil,
Okanoue, and Ma and Alden before him/her and with the teachings
[a] as shown by the combination of Khalil, Okanoue, and Ma, a
method and apparatus for configuring a public mobile access data
network to provide public data access between an Internet and a
mobile node which is attachable to various points of the public
mobile access data network, and [b] as shown by Alden, tunneling
based upon a load balancing criteria, to be motivated to modify

the system of the combination of Khalil, Okanoue, and Ma by

choosing a tunnel for routing based upon load balancing

requirements. This modification can be performed in software.

This would improve the system by helping to prevent a home agent

or foreign agent from being congested.

Allowable Subject Matter

10.   Claims 20, 23, 27-36, 40, 55 - 59, 61, 62, and 64-75 are

allowed.

11.   Claims 3-5 and 48 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base

claim and any intervening claims.

The following is a statement of reasons for the indication

of allowable subject matter.

Regarding claim 3, although Khalil provides public mobility

service (fig. 11 box 22, roams over a public network, col. 15

lines 17-19), none of the prior art of record teaches or fairly

suggests the applicant's invention of the mobility service is

provided independently of mobility services offered by a radio

access specific technology specific network. For support see

specification pg. 5 lines 2-4.

Regarding claims 20 and 40, nothing in the prior art of the record teaches or fairly suggests a multi-exit discriminator parameter to advertise to the Internet a preferred entry point to the public mobile access data network in view of the prior art teachings of Khalil, in combination with all the other limitations listed in the claim. For support see specification pg. 34 lines 4-14.

Regarding claim 23, Khalil teaches a method and apparatus for use in an Internet (fig. 11 box 14), a public mobile access data network (fig. 11 box 22, roams over a public network, col. 15 lines 17-19) providing a mobile node (fig. 11 box 11) data access to the Internet and data access to the mobile node from the Internet.

The system comprises a home agent router (fig. 11 box 22) coupled to a backbone of the Internet (fig. 11 box 14).

Although Khalil teaches a foreign agent coupled to the home agent for communicating with one or more mobile nodes over a radio interface (col. 1 lines 56-60), the reference is silent on a plurality of foreign agents coupled to the mobile nodes and home agents.

Okanoue teaches a plurality of foreign agents (fig. 1 box
3, col. 4 lines 1-2) coupled to the mobile node (fig. 1 box 1).

The system comprises the home agent and foreign agent
routers communicate using a mobile Internet protocol (Khalil:
virtual distributed home agent protocol, col. 6 line 63 - col. 7
line 2).

Although Khalil teaches tunneling (col. 1 lines 58-60) the
reference is silent on the tunneling includes a label switched
path that uses multi-protocol label switching 'MPLS' in an IP
environment.

Ma teaches tunneling via a label switched path that uses
multi-protocol label switching 'MPLS' in an IP environment (fig.
1, col. 5 lines 47-53).

However, none of the prior art of reference teaches or
fairly suggest when the mobile node moves from one foreign agent
to another foreign agent, the home agent is configured to inject
an address associated with the mobile node into the label
switched path. For support, see applicant: fig. 5 box 68, pg. 26
lines 22-24.

Regarding claims 29 and 55, although Khalil teaches a care-
of-address (col. 1 line 66 - col. 2 line 7), none of the prior
art of reference teaches or fairly suggests the home agent

assigning the mobile node a home address; the foreign agents

assigning the mobile node a care-of-address, wherein the home

agent associates the home address and the care-of-address; and

setting in one or more hosting foreign agents an address of the

home agent.

Regarding claim 48, none of the prior art of reference

teaches or fairly suggests the label switched routers

encapsulate incoming data packets with a label, remove a label

from outgoing data packets, and route the data packets by

swapping labels at each label switched router along the label

switched path in view of the prior art teachings of the

combination of Khalil, Okanoue, and Ma, in combination with all

the other limitations listed in the claim.

Regarding claim 58, none of the prior art of reference

teaches or fairly suggests the control entity includes a mobile

IP controller interfacing a MPLS controller for setting up and

controlling the label switched path (see applicant: fig. 5).

Response to Arguments

12.   Applicant's arguments with respect to amended claim 1 (pg.

21) have been considered but are moot in view of the new

ground(s) of rejection. The examiner agrees that the teachings

in the prior office action do not encompass the added

limitations of the claim. Therefore, a new search was performed.

13. Applicant's arguments, see pg. 23 last paragraph, filed

2/13/2004, with respect to claim 23 have been fully considered

and are persuasive. The rejection has been withdrawn.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of

rejection presented in this Office action. Accordingly, **THIS

ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is

reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action

is set to expire THREE MONTHS from the mailing date of this

action. In the event a first reply is filed within TWO MONTHS

of the mailing date of this final action and the advisory action

is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will

expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated

from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than

SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier

communications from the examiner should be directed to Ronald

Abelson whose telephone number is (703) 306-5622. The examiner

can normally be reached on M-F.

If attempts to reach the examiner by telephone are

unsuccessful, the examiner's supervisor, Seema Rao can be

reached on (703) 308-5463. The fax phone number for the

organization where this application or proceeding is assigned is

703-872-9306.

Information regarding the status of an application may be

obtained from the Patent Application Information Retrieval

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information for unpublished applications is available through

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see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Ronald Abelson
Examiner
Art Unit 2666

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4/28/04

DANG TON
PRIMARY EXAMINER